

CLAIMS

1. Process for the change or alteration of the local sharpness of a photographic image having a multitude of image elements, including the steps of

determining a correction mask for change of the sharpness from image data representing the image to be sharpened, whereby elements of the correction mask for the change of the sharpness and/or local sharpness describe a local change of the sharpness; and

using, in addition to an image property, information relating to the image for determination of the elements .

2. Process according to claim 1, wherein the image property is a local contrast.

3. Process according to claim 1, wherein the additional information is at least one local image property which is respectively present locally in the vicinity of the location and/or at the locations to which the elements of the correction mask for the change of the sharpness relate.

4. Process according to claim 3, wherein the local image property is at least one of the colour tone, the colour saturation and the colour contrast.

5. Process according to claim 1, wherein the additional information is image content information on the image content.

6. Process according to claim 5, wherein the image information is at least one of information obtained from an analysis of the image data and information associated with the image data and available to the correction process in addition to the image data.

7. Process according to claim 1, further comprising the following steps

carrying out an analysis of the image for determining the
5 image content information to recognize by analysis of the image to be corrected or an image derived therefrom at least one characteristic image region which has a multitude of image elements;

10 assigning a nominal image sharpness or nominal image sharpness range to at least one recognized characteristic image region; and

carrying out the change by way of the correction mask for the change or local change of the sharpness so that elements of the correction mask which relate to the image elements
15 which are included in at least one recognized characteristic image region cause at least an approximation of the image sharpness to the assigned nominal image sharpness or the assigned nominal image sharpness range.

20 8. Process according to claim 7, including the further step of

determining a degree of association on the basis of the analysis, which fixes the degree of association or the probability of association of an image element to a
25 characteristic image region; and

determining the change of the image sharpness or local image sharpness in consideration of the nominal image sharpness or the nominal image sharpness range as well as in consideration of the degree of association assigned to the
30 respective image elements.

9. Process according to claim 6, wherein the image data for the image elements fix colour values and image properties which at least include the brightness and the colour tone, and

wherein the analysis of the image data for the determination of the image content information includes the steps of

providing an assignment rule which determines which colour value or colour values belong to at least one preselected characteristic colour value, whereby each of the preselected colour values is assigned a nominal image sharpness or a nominal image sharpness range; and

whereby the determination of the correction mask for the alteration of the image sharpness depending on the image information includes the steps of

carrying out the determination of the elements of the correction mask for the change of the image sharpness depending on the association of the colour value to one of the at least one characteristic colour value, whereby the determination is carried out in consideration of the nominal image sharpness or the nominal image sharpness range which is associated with the characteristic colour value.

10. Process according to claim 6, including the further steps of

carrying out an analysis of the image to be corrected or an image derived therefrom for recognizing transitions between image regions which include a multitude of neighbouring image elements and which have a different structuring;

whereby the determination of the elements of the correction mask for the change of the image sharpness is carried out depending on whether or not the elements relate to the transitions.

11. Process according to claim 6, wherein the information assigned to the image data relates to the position of artefacts in the image, and whereby the elements of the correction mask for the change of the image sharpness are

determined depending on whether or not they relate to locations in the image where artefacts are present.

12. Process according to claim 2, wherein based on the local
5 contrast information a base mask for the change of the sharpness is determined the elements of which are corrected based on the associated elements of an additional information mask for obtaining the correction mask for the change of the sharpness, whereby the additional information mask is
10 determined from the additional information.

13. Process according to claim 1, comprising the further steps of

applying an image detail reduction process to the image
15 data to be sharpened so that the coarse image data resulting therefrom represent a coarse image with less details than the image to be sharpened, whereby the coarse image includes a multitude of coarse image elements;

on the basis of the local contrast information
20 determining a coarse correction mask which describes a correction of the image sharpness of the coarse image;

based on the additional information correcting the
elements of the coarse correction mask, whereby the correction
mask for the change of the image sharpness corresponds to the
25 corrected coarse correction mask or is determined on the basis thereof.

14. Device for the focussing of a photographic image with a multitude of image elements, comprising

30 a correction mask determining unit for determining a correction mask for the change of the image sharpness from the image data which represent the image to be sharpened, whereby the element of the correction mask for the change of the image sharpness describe the local change of the image sharpness,

and for determining the elements on the basis of an image property and additional information relating to the image.

15. Program for loading onto or running on a computer for
5 carrying out the process according to claim 1.

16. Computer program medium on which the program of claim 15 is stored.

10 17. Image reproduction device, comprising at least one device selected from the group of

a device according to claim 14,

a control unit which carries out the process according to claim 1, and

15 a computer on which the program of claim 16 is loaded or runs.

18. Image reproduction device according to claim 17, which is selected from the group of

20 a photographic printer, a printer, a photolab, a minilab, a monitor, and a computer with monitor.